

REMARKS

This Amendment is filed in response to the Office Action mailed April 16, 2004. Applicant initially notes with appreciation the Examiner's continued thorough examination of the application. With regard to the Office Action, Applicant has further amended independent Claim 1. Applicant first submits that the amendments were not made in light of the prior art, but were instead made to clarify the invention. Applicant further respectfully submits that amended independent Claim 1 is patentable over the cited references, and as such, requests that the Examiner reconsider the claims in light of the remarks below.

With regard to the Office Action, all of the claims have been rejected as either anticipated under 35 U.S.C. § 102(b) or obvious under 35 U.S.C. § 103(a) in light of U.S. Patent No. 5,623,355 to Olsen. Applicants respectfully disagree with these rejections.

The claimed invention relates to a data communications link having a transmitter station that includes a multi-power level optical source connected to receive data words of n digital bits and arranged to encode different value bits of each word into different power levels of a signal having m optical power levels (i.e., a multi-power-level optical signal), which is then output by the transmitter. The output of the transmitter is transmitted along a communications path to a data receiver station that includes a data decoding receiver arranged to receive and decode the multi-power-level optical signal into n bit digital words. Importantly, the claimed invention encodes the data into different power levels so as to increase bandwidth. Specifically, the claimed invention encoded different value data into more than two power levels of the m power level signal. This allows for more data to be transmitted across the data link.

In this regard, the system of the '355 Olsen patent nowhere teaches or suggests encoding the data into more than two power levels of the signal. Instead, the '355 Olsen patent merely discloses a binary system in which a bit having a zero value is encoded at one power level X , while a bit having a value of 1 is encoded into a second power level Y . As such, the '355 Olsen patent does not anticipate Claim 1.

Applicant further submits that the '355 Olsen patent does not render Claim 1 obvious. The system described in the '355 Olsen patent is fundamentally different from the system of the claimed invention. The system of the '355 Olsen patent does not physically encode data into the

X and Y power levels of the signal. Instead, for each bit, the transmitter of the system determines if it is a one or a zero. If the value is a one, the transmitter transmits the signal at the Y power level, if it is a zero, the transmitter transmits the signal at the X power level. In the '355 Olsen system, the receiver detects the power level of the signal and determines that the bit has a value of one if the power level is Y and the value is zero if the power level is X. This is a binary method that transmits data one bit at a time, with the signal being sent at sequential different power levels. In short, the system of the '355 Olsen patent does not actually encode data into two different power levels of a signal. Instead, it merely sends the signal at one power level to represent a 1 and at a second power level to represent a 0. This is made clear at col. 4, lines 44-47 of the '355 Olsen patent, which states that the system uses an on-off signaling modulation method.

The claimed invention, on the other hand, does not use an on-off (i.e., binary) signaling method. The claimed invention is not using different power levels to indicate different bit values. Instead, the claimed invention is actually encoding different bit values into different power levels of the signal. The signal is then transmitted with different power levels containing encoded data. The receiver is not merely detecting whether the signal is at a first or second power level to decode the data. Instead, the receiver actually looks to each power level of the signal and decodes the data encoded at that power level. In the '355 Olsen patent each bit of data is represented merely by 1s and 0s. This is a problem, because it means that the digital data can only be transmitted as a stream of on - off signals. The result of this is that the time needed to transmit a full word of data can be significantly longer than for the system of claim 1, in which the value of a bit can be presented by any one of three or more different power levels. This results in a more efficient data transmission process.

The claimed invention and the system of the '355 Olsen patent use completely different encoding methods. There is nothing with the disclosure of the '355 Olsen patent to teach or suggest encoding different data into different power levels as is recited in Claim 1, much less encoding data into more than two different power levels.

Further, none of the other cited references teach or suggest encoding data into different power levels of a signal. As such, none of these references when combined with the '355 Olsen

patent provide the needed teachings or suggestions lacking in the '355 Olsen patent. Applicant therefore respectfully submits that Claim 1, as well as the claims that depend therefrom, is patentable over the cited references.

CONCLUSION

In light of the amendments to the claims and the remarks above, Applicants respectfully submit that the case is now in condition for allowance. It is therefore requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicant's undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

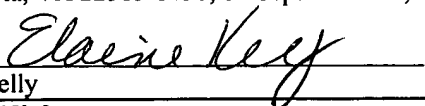


W. Kevin Ransom
Registration No. 45,031

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on September 16, 2004


Elaine Kelly

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